 AIR LIQUIDE	PRESSURE TEST CERTIFICATE	Project No. : K70101
		Project Name : ASU KOSICE TF
		Client :

Subcontractor : VAM
Subcontract No. : 5.6801

VAM
VOEST MONTAGE

TEST NUMBER : 019/09/05

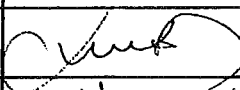
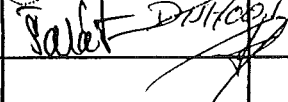
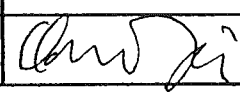
SYSTEM :

RISK CATEGORY : III.

PID No.	Line Size	Line No.	Area	Isometric No.	Material Class
034/010		200 O 64005	TF	200O64005	1.4541
034/034		25 O 64006	TF	25O64006	Monel

Test Pressure: 57,2 bar Test Duration: 30 min
Test Medium: N Manometers No.: 0 - 100 bar, 005991

Special requirements / comments:
Tlaková skúška bola preveďená za účasti inšpektora Technickej inšpekcie SR v Košiciach ale bez predlo-
ženého osvedčenia o konštrukčnej dokumentácii realizovanej stavby.

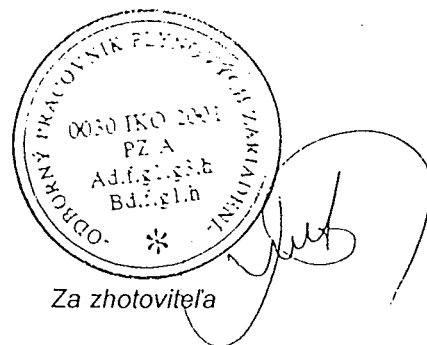
WITNESSED AND ACCEPTED ON BEHALF OF	WITNESS	SIGNATURE	DATE
	SUBCONTRACTOR		13.9.2005
	ALE		13/9/05
	CLIENT		
	NOTIFIED BODY		14-11.2005

VAM GmbH & Co Anlagentechnik und Montagen A. Bernoláka 10, Ružomberok		PROTOKOL O STAVEBNEJ A TLAKOVÝCH SKÚŠKACH ODOLNOSTI A TESNOSTI POTRUBIA č. 019/09/05			
Miesto stavby:		AIR LIQUIDE - U. S. STEEL s. r. o. Košice ASU No. 9 Košice			
Označenie skúšaného potrubia:		200 O 64005, 25 O 64006			
Prevádzkové podmienky:		Najvyšší pracovný pretlak: 4,0 MPa		Najvyššia pracovná teplota: - 196 °C	
Parametre rozvodu:		Menovitá svetlosť: DN 200,25		Materiál: tr. 1.4541, monel	
Potrubie bolo podrobené stavebnej a tlakovým skúškam podľa STN 130020, NV 576/02 a STN 38 6461					
Stavebná skúška		Skúška odolnosti		Skúška tesnosti	
Dátum skúšky:	13.09.05	Dátum skúšky:	13.09.05	Dátum skúšky:	13.09.05
<ul style="list-style-type: none"> - umiestnenie výstroja potrubia - funkcie uzatváracích zariadení - dokončenie a kvalita zvaračských prác - správnosť uloženia a jeho spádovanie - úplnosť dokumentácie 		Skúšobný pretlak:	5,72 MPa	Skúšobný pretlak:	4,0 MPa
		Skúšobné médium:	N ₂	Skúšobné médium:	N ₂
		Skúšobná doba:	30 min.	Skúšobná doba:	po dobu prehlídky
		Použité meracie prístroje: kontrolný deformačný manometer 0 – 10 MPa		Použité meracie prístroje: kontrolný deformačný manometer 0 – 10 MPa	
		Ø 160 mm		Ø 160 mm	
		v. č. 005991		v. č. 005991	

Potrubie vyhovuje daným prevádzkovým podmienkam. Skúška odolnosti a tesnosti bola v zmysle hore uvedených nariadení a noriem úspešná.

Tlaková skúška bola prevezená za účasti inšpektora Technickej inšpekcie SR v Košiciach a bez predloženého osvedčenia o konštrukčnej dokumentácii realizovanej stavby.

Za objednávateľa



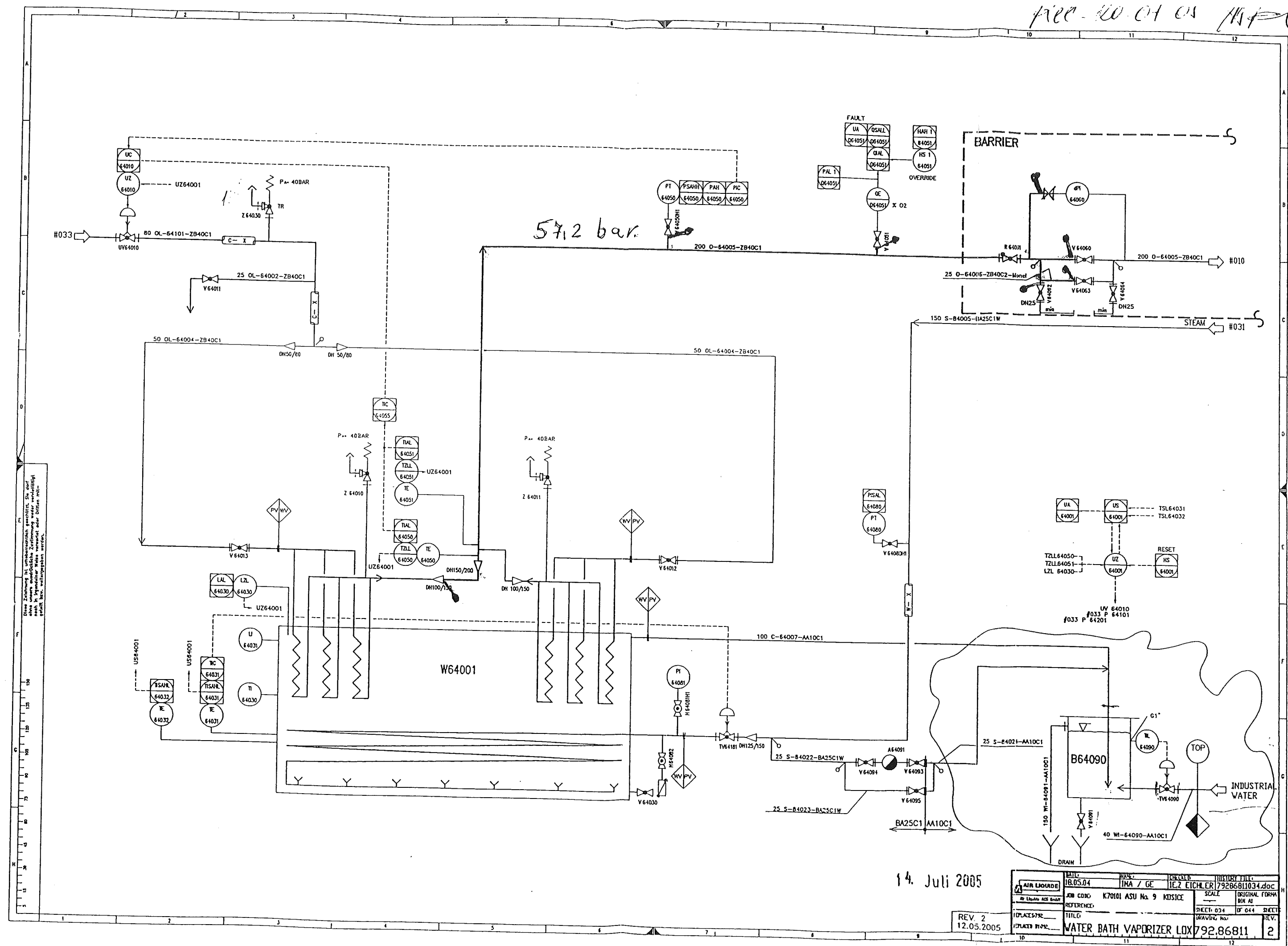
Za zhotoviteľa

V Košiciach dňa 13.9.2005

VAM
VOEST MONTAGE

25 O – 64006				
Welding	DN	Diameter	Welder No	Protoc.No
1	1/2"	21,3	96	80/2005
2	25	33,7	96	3317/2005
3	25	33,7	96	3457/2005
4	25	33,7	96	3318/2005
5	25	33,7	96	3318/2005
6	25	33,7	96	3318/2005
7	25	33,7	96	3318/2005
8	25	33,7	96	3318/2005
9	1/2"	21,3	96	80/2005
10	25	33,7	96	3457/2005
11	25	33,7	96	3317/2005
12	25	33,7	96	3318/2005
13	25	33,7	96	3318/2005
14	25	33,7	96	3318/2005
15	25	33,7	96	3318/2005

Free-20.04.05 MFL

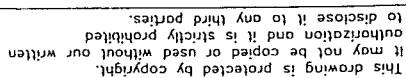


Diese Zeichnung ist urheberrechtlich geschützt. Sie darf ohne schriftliche Zustimmung weder ververvielfältigt noch in irgendeiner Weise weitergegeben werden.

14. Juli 2005

REV. 2
12.05.2005

DATE	18.05.04	DESIGNED BY	IMA / GE	CHECKED BY	IEZ EICHLER	FILE	79286811034.doc
JOB CODE	K70101 ASU No. 9	KOSICE					
REFERENCE							
REPLACES							
REPLACED BY							
TITLE	WATER BATH VAPORIZER LOX				79286811	2	



Rec. ogar 11

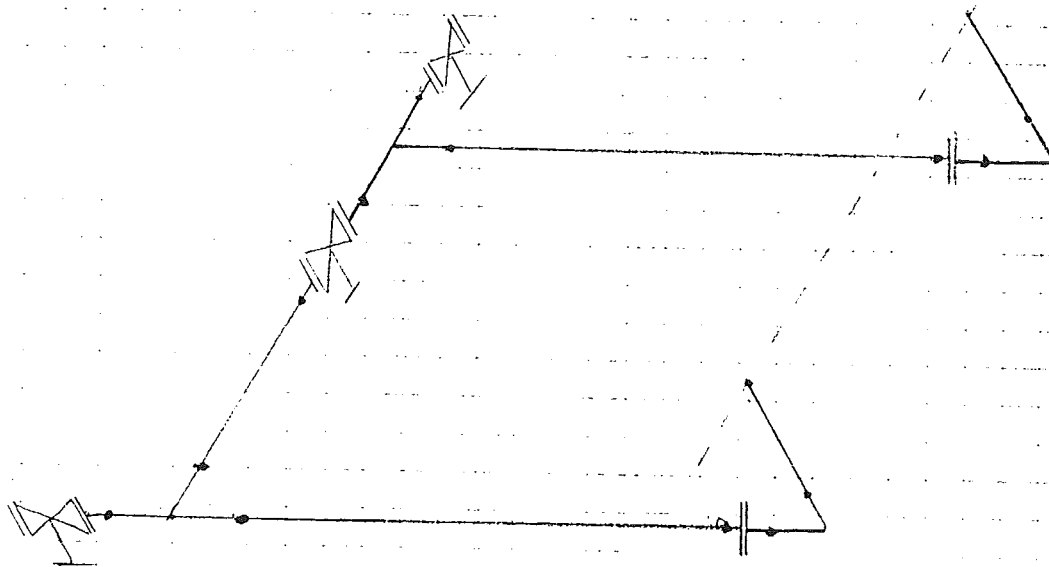
Responsibility of the assembling company:

- Accompanying drawings:

Accompanying lists:

Pipe standard:

- AL Standard No.: ZB40C2 Mone!



25-0-64006

ASST
CEN
T

Made by : Ing. Supak
Date : 11.10.2005
revision : 0

VAM **Anlagentechnik und Montagen**
01 - 5 - 6801 - 01 KOSICE AIR LIQUIDE TANKFARM - AS BUILT
Line Number : 25 O-64006 MONEL ZB40C2

	Weight (kg)
pipe mat.:	38,26
con. valves	-
man. valves:	18,60
pr. supports:	-
sek. supports	-
summe:	56,86

AS BUILT

Stückliste 01 25 O-64006 MONEL ZB40C2 Revision: A

Teilenummer	NW1	NW2	Teilbezeichnung	Einzelgew.	Menge	EP-Lieferung	EP-Montage	gesamt	Stunden ges.
FEHLER diese Liste bitte nur mit Menu 1 sortiert nach BG - Leitung - Rokls verwenden									
BLIND5	25	0	Blind flange Monel	1,40 kg	2,00				
ELBOW13	25	2	Elbow 90°, type 3 1.4541 DIN 2605-1 33,7x2	0,09 kg	2,00				
FLANGE7	25	0	Welding neck flange 1.4541 DIN EN 1092-1	1,00 kg	2,00				
FLANGE8	25	0	Welding neck flange Monel	1,00 kg	6,00				
GASKET1	25	2	Gasket Graphite w. CrNi-Inlay 70x2x35x		8,00				
HEXNUT1	12	0	Hexagon head nut A2-70 DIN EN ISO 4032	0,02 kg	32,00				
PIPE2	25	2	Pipe, welded 1.4541 DIN EN ISO 1127 33,7x2	1,58 kg	0,70				
PIPE3A	25	2	PIPE, WELDED Monel 33,7x2,77	1,58 kg	3,50				
SCREW1C	12	0	Hexagon head screw A2-70 DIN EN ISO 4014 65	0,60 kg	32,00				
TEE7	25	2	Tee Monel 33,7x2x33,7x2	0,40 kg	2,00				
WASH1	13	0	Washer B A2-70		32,00				
Summe: 01 25 O-64006 MONEL ZB40C2				38,26 kg					

Stückliste 01 25 O-64006 MONEL ZB40C2 Revision: A											
Teilenummer		NW1	NW2	Teilebezeichnung		Einzelgew.	Menge	EP-Lieferung	EP-Montage	gesamt	Stunden ges.
FEHLER diese Liste bitte nur mit Menu 1 sortiert nach BG - Leitung - Roklis verwenden											

Liefersumme:	
Montagesumme:	
Gesamtsumme:	
Gesamt-Stunden:	
Gesamtgewicht:	38,26 kg
** Ende der Ausgabe	

Stückliste 01 25 O-64006 MAN VAL BY AL Revision: A


Teilenummer	NW1	NW2	Teilebezeichnung		Einzelgew.	Menge	EP-Lieferung	EP-Montage	gesamt	Stunden ges.
-------------	-----	-----	------------------	--	------------	-------	--------------	------------	--------	--------------

FEHLER diese Liste bitte nur mit Menu 1 sortiert nach BG - Leitung - Rokls verwenden

S0V64062	25	0	SHUT-OFF VALVE; V64062 assembling only		6,20 kg	1,00				
S0V64063	25	0	SHUT-OFF VALVE; V64063 assembling only		6,20 kg	1,00				
S0V64064	25	0	SHUT-OFF VALVE; V64064 assembling only		6,20 kg	1,00				
Summe: 01 25 O-64006 VALVES BY AL					18,60 kg					

Liefersumme:	
Montagesumme:	
Gesamtsumme:	
Gesamt-Stunden:	
Gesamtgewicht:	18,60 kg
** Ende der Ausgabe	

ASBUILT


 CONSULTING&CONTROL OF WELDING s.r.o. Dlhá 88 01009 Žilina, Slovakia tel/fax: 041/5006699 mobil: 0905 253 069 e-mail: c-cw@c-cw.sk		Protokol o kapilárnej skúške <i>Penetrant testing protocol</i>		Protokol /Report 80/ 2005	
		Výrobca/Producer AIR LIQUIDE		List.č. /Sheet No. 1 / 1	
		Objednávateľ/ Customer: USS Košice			
Popis zvaru/ Description of weld 25 O 64006			Číslo výkresu/ Drawing No.: AIR LIQUIDE		
Priemer/ Diameter Hrúbka/ Thickness	25	Druh zvaru/ Type of weld Druh výroby/ Mode of operation	Materiál/ Material Rozsah kontroly/ Range of control	1.4571 %	Požadovaný stupeň kvality Permitted degree of quality 1
Luxmeter/Luxmeter LX105		Skúška bola vykonaná podľa/ Examination acc to: STN EN571-1			
Druh osvetlenia Illumination	mixed	Intenzita svetla Light intensity 1000lx	Hodnotenie podľa/ Valuation of imperf. acc to: STN EN 1289		
Penetračný materiál Penetrant type Penetrant	Helling-Nordtest Kontrastrot 88	Čistič Cleaner Vývojka Entwicker	Rainiger 87 Entwicler 89	Penetračný čas Time of action Vyvolávací čas Time of developpm 20min 20min	Teplota Temperature 20 °C
Číslo zvaru Weld No	Číslo zvarača Welder No	Rozmer Dimension	Chyba Defect	Veľkosť chyby Dimension of defects	Hodnotenie Valuation
1	96				1
9	96				1
Poznámka Remark					

General evaluation:

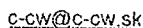
Zvary vyhoveľi

Dátum skúšky/ Date of examination 19. 9. 2005	Skúšku vykonal Name of exam. Ing. Pavol Višňovský	Vyhodnotil Valuated Ing. Pavol Višňovský	Dňa Date 19. 9. 2005 CONSULTING & CONTROL OF WELDING Ing. Pavol Višňovský Dlhá 88, 010 09 ŽILINA IČO: 33857020 DIČ: 690217943/691
Miesto skúšky/ Place of examination Košice	025/05/II	025/05/II	

Celkové hodnotenie / General evaluation: ALL WELDS ACCEPTED

Dátum skúšky/Date of examination 20.9.2005	Skúšku vykonal/Name of exam. František Višňovský 1A156/02	Vyhodnotil / Valuated František Višňovský 1A156/02	Oznámenie 21.9.2005 Signature:  Ing. Pavol VIŠŇOVSKÝ Dlhé Pole 323, 013 62 ZILINA IČO:33857920 DIČ: SK2178437/691
--	---	--	--

Vysvetlivky / Notes: V : Zvar vyhovel / WELD ACCEPTED
 N : Zvar nevyhovel / WELD NOT ACCEPTED
 R: Opravovaný zvar / REPAIRED WELD



List č./Sheet No. 1/1

Objednávateľ/Customer **US Steel Košice**

Číslo výkresu / Drawing No.: 25-0-64006

0-1 mm

**CONSULTING & CONTROL
OF WELDING**
Ing. Pavel VIŠŇOVSKÝ
Dlhé Pole 323, 013 32 ŽILINA
IČO:33857920 DIČ: 6902178437/691

CONSULTING & CONTROL OF WELDING

Ing. Pavol Višňovský

Dihé Pole 323

013 32 Žilina

tel: +421 - 41 - 500 66 97

fax: +421 - 41 - 500 66 99

C-CW@C-CW.SK

Protokol o skúške prežiarení Radiographic examination report

Protocol/Report:

3318/2005

List č./Sheet No. 1/1

Výrobca/Producer VAM GmbH

Objednávateľ/Customer **US Steel Košice**

Popis zvaru/Description of weld	USS / VAM GmbH
---------------------------------	----------------

Číslo výkresu / Drawing No.: 25-0-64006

Priemer Diameter	25	Druh zvaru Weld type	V	Materiál / Material	monel	Požadovaný stupeň kvality Permitted degree of quality
Hrúbka Thickness	2	Druh výroby Mode of operation		Rozsah kontroly Range of control		

Zdroj/Source	Ir192
--------------	-------

Aktivita žiariča / Intensity 45 Ci

Skúška vykonaná podľa/Examination acc. to: **STN EN 444, STN EN 14 35**

Hodnotenie podľa/Valuation of imperf.acc to: STN EN 12 517, STN EN 13 480,5

Velkosť ohniska/Focal spot size 3x1,8
vzdialenosť/Focal distance 300

Ohnisková

Druh filmu/Film type

AGFA D5: Druh fólií /

Screen type:0.027

Mierka/|Q|: 10FEEN

Expozičný čas / Exposure time

56sec

Vzdialenosť povrch-film

Distance surface-film

0-1 mm

[illegible]

Celkové hodnotenie / General evaluation: ALL WELDS ACCEPTED

Dátum skúšky/Date of examination 3.8.2005	Skúšku vykonal/Name of exam.: Miroslav Orčo 04/10531	Vyhodnotil / Valuated Miroslav Orčo 04/10531	Dňa / Date 4.8.2005 Signature and stamp
---	--	--	--

Vysvetlivky / Notes: V : Zvar vyhovel / WELD ACCEPTED
N : Zvar nevyhovel / WELD NOT ACCEPTED
R : Opravovaný zvar / REPAIRED WELD

**CONSULTING & CONTROL
OF WELDING**
Ing. Pavol VIŠŇOVSKÝ
Dlhé Pole 323, 013 32 ŽILINA
IČO: 33857920 DIČ: 6902178437/69

11022

Terraspan Pipe Fittings Ltd

The Nickel Alloy Specialists

135 MANOR FARM ROAD, GREET
BIRMINGHAM B11 2HT
ENGLAND

Telephone UK
FACSIMILE UK
FACSIMILE INTL
E-MAIL:
Website:

:0121-707 9921
:0121-708 1752
:() 44 121 708 1752
pipes@terraspan.co.uk
www.terraspan.co.uk

CERTIFICATE OF CONFORMITY / TEST ACCORDING TO BS EN 10204 3.1

Order details

Customer:
Order Number:
Date:
TPF Ref:
Invoice No:
Item Number:

Philip Cornes & Co Ltd
B32504870
21 July 2005
105938
37449
1

Product details

Quantity:
Description:
Fitting material specification:
Cast No:
Batch No:

4
1" NB sch10 90DEG LR elbow
ASTM B366 WPNC UNS No 4400
BYE7531
TBN1531

Mechanical results taken from mill certificate

Base material specification:
Yield:
Tensile:
Units of stress:
Elongation %:
Reduction of area %:
Hardness:
Heat treatment:

ASTM B165 UNS No 4400
245
610
MPa
77.3
900DEG C annealed

Chemical analysis taken from mill certificate (%)

Nickel [Ni]: 63.7
Copper [Cu]: 32.4
Chromium [Cr]:
Iron [Fe]: 2.46
Phosphorus [P]:
Manganese [Mn]: 1.0
Silicon [Si]: 0.27

Sulphur [S]: <0.001
Molybdenum [Mo]:
Carbon [C]: 0.13
Cobalt [Co]:
Aluminium [Al]:
Magnesium [Mg]:
Titanium [Ti]:



Certificate Nr: 961983

Signed

M. D. Phillips

M. D. Phillips
Terraspan Pipe Fittings Ltd
Quality Control



SPECIAL METALS WIGGIN LIMITED

Holmer Road, Hereford, England HR4 9SL
Tel: +44 (0)1432 382200 Fax: +44 (0)1432 264030
Reg. in England No. 36721

INSPECTION CERTIFICATE

Quality System Compliance :-
EN 10204/DIN 50 049 - 3.1.8
ISO 9002 - AFAQ
ISO/TS 16949 (by agreement) - AFAQ
CAA (B2, B4) Approval No. A1/2388/47
TUV Approval to AD - Markblatt WG/TRD 100
IR3000:SABRe Approval No. 1508
For tests performed by IncoTest :-
ISO/IEC 17025 - UKAS, CAA (B4)



Certificate No. 1228741

Dated 31/05/2002

Page No. 1 of 1

CONSIGNEE WITH GOODS

Product Description & Dimensions

MONEL alloy 400, Cold Drawn Pipe, Cold Drawn, Annealed.
1.0 NB SCH 40 X 197 / 276 IN NOMINAL

Our Reference No.	Quantity	Weight or Length	MHI Batch No.	Cast No.	Incoming Certificate No.	Advice Note
FAC2212/01	32	185.2M	FAC2212/01	BYE7531		A19818

Specifications:
ASTM B 166 ISS 93 UNS N04400

Chemical Composition Weight % (except where stated ppm)

	C	Si	Mn	S	Cu	Fe	Ni*
	0.13	0.27	1.0	<0.001	32.4	2.46	63.7
Max	0.3	0.5	2.0	0.024	34.0	2.5	63.0
Min					28.0		

Test Report No.
705644A

Mechanical Tests

Test Report No.	Temp. °C	0.2% PS MPa	Ten.Str. MPa	%Elong. on 50mm
705644A	20	245	610	77.3

Heat treatment

Batch & test piece: Annealed 900 C continuous furnace

Other tests - remarks

Induction air melted, Powdered slag (uphill) cast.
Castcode NDM.
Visual and dimensional examination satisfactory.

* Ni determined by difference.
Hydrostatic test satisfactory to 8 MPa
Positive material identification test satisfactory.

End of certificate

Certified that, unless otherwise stated above, the whole of the above-mentioned materials have been manufactured, tested and inspected in accordance with the terms of the contract/order applicable thereto and conform fully to the standards/specification quoted herein and the requirements of:

BS EN ISO 9002.

Signed

For and on behalf of SPECIAL METALS WIGGIN LIMITED
Authorized Signatory

C.L. Pockett

Date 31/05/2002

BRIGHTRAY, CORRONEL, FERRY, INCOCLAD, INCOLOY, INCONEL, INCOTHERM, INCO-WELD, KOTHERM, MAXORS, MONEL, NILO, NILOMAG, NIMONIC, NIOTHERM, NI-SPAN, UDIMET & WIGGIN are Trade Marks of Special Metals Corporation

seaco  **Groep**

Gasket & Sealing Technology

SL-Piping GmbH
IM Hock 10-12

D - 40721 Hilden

Bleiswijk, 07.01.2005

Certificate: EN 10204 / 2.1.

Certificate nr. : SEACO 20050003

Unsere Ref. : VO-050005


Ihre Ref. : 1459-WG

Sehr geehrte Damen und Herren,

hiermit bestätigen wir, daß das von uns gelieferte Material den Anforderungen
und der Spezifikation Ihrer o.g. Bestellung Nr. 1459-WG entspricht.

Seaco Groep B.V.

R. Corpeleijn

seaco  **Groep**

Gasket & Sealing Technology

Jan van der Heydenstraat 26a

2665 JA Bleiswijk

Tel. +31 (0) 10 5226536

Fax. +31 (0) 10 5226537

Kunde: VAM

Dokumentation

Projekt: Air Liquide Kosice

Bestell-Nr. SK20051000 - Kom. 5.6801.6



sl-ref.: 1736-WG

sl piping	Rohr	Bestell- menge	Einheit	Benennung	Maß 1	Maß 2	Werk	Abweichungen	Abweichungen	Liefer	Charge
Pos.	klasse						stoff	Ergänzungen	Ergänzungen	Menge	
7	BA25C1	9,00	Stck	Gasket	DN200		Graphit with CrNi-Inlay		PN40	9	WZ 2.1
8	ZB25C1	3,00	Stck	Gasket	70 / 35	2	Graphit with CrNi-Inlay		PN40	3	WZ 2.1
9	ZB40C1	19,00	Stck	Gasket	107 / 61	2	Graphit with CrNi-Inlay			19	WZ 2.1
10	ZB25C1	1,00	Stck	Gasket	225 / 169	2	Graphit with CrNi-Inlay		PN25	1	WZ 2.1
11	AA10C1	2,00	Stck	Gasket	35 / 70	2	Graphit with CrNi-Inlay			2	WZ 2.1
12	AA40C1	6,00	Stck	Gasket	35 / 70	2	Graphit with CrNi-Inlay			6	WZ 2.1
13	BA25C1	16,00	Stck	Gasket	35 / 70	2	Graphit with CrNi-Inlay			16	WZ 2.1
14	ZB25C1	5,00	Stck	Gasket	35 / 70	2	Graphit with CrNi-Inlay			5	WZ 2.1
15	ZB40C1	3,00	Stck	Gasket	35 / 70	2	Graphit with CrNi-Inlay			3	WZ 2.1
16	AA40C1	5,00	Stck	Gasket	418 / 325	2	Graphit with CrNi-Inlay		PN40	5	WZ 2.1
17	ZB10C1	1,00	Stck	Gasket	92 / 49	2	Graphit with CrNi-Inlay			1	WZ 2.1
18	ZB25C1	1,00	Stck	Gasket	92 / 49	2	Graphit with CrNi-Inlay			1	WZ 2.1
19	ZB25C1	1,00	Stck	Gasket	92 / 49	2	Graphit with CrNi-Inlay			1	WZ 2.1
20	ZB40C1	2,00	Stck	Gasket	92 / 49	2	Graphit with CrNi-Inlay			2	WZ 2.1